44. (New) A method of decoding encoded bitstreams of claim 39, wherein the priority data identifies which vide object layer to discard in the event of limited memory or processor resources.--

REMARKS

The application contains claims 29-30, 34-35 and 39-44. Applicant respectfully requests withdrawal of all outstanding rejections and allowance of the application.

SPECIFICATION

Applicant has amended the specification to incorporate the subject matter of patent application 09/654,076, the continuation application of the now abandoned application no. 08/986,118. Applicant submits that the present application appropriate incorporates the subject matter of application no. 09/654,076.

THE CLAIMS ARE PATENTABLE OVER CHANG ET AL.

The Examiner rejects claims 1, 4-5, 7, 11, 14-15, 22, 24-25, and 28 as being anticipated by Chang et al., U.S. Patent No. 6,025,877 ("Chang et al."). Applicant cancels claims 1-28 without disclaimer or acquiescence to the Examiner's rejections and submits that claims 29-30, 34-35 and new claims 39-44 are patentable over Chang et al. Applicant respectfully submits that Chang et al. fail to teach each element of the claims. Applicant submits that the following remarks will clarify critical issues such as how to properly define and distinguish a video object layer from a video object with respect to both the claimed invention and the teachings of the prior art. Once these terms are understood, then the Applicant submits that the patentable status of the claims and the differences between the priority encoding schemes of Chang et al. and the present invention will become clear.

First, before turning to the claims, we will compare the terms used in the present specification to the terms used by Chang et al. The present specification explains that a video object is composed of layers called Video Object Layers (VOLs). A VOL is composed of Video Object Planes (VOPs) that are shown by way of example in FIG. 1 as an outline of a person (VOP1), the background (VOP0) and a logo (VOP2). The corresponding terms for (1) a VOL and (2) a VOP in Chang et al. are (1) "video frame" (Col. 1, line 27) and (2) a "video object" such as video objects A, B and C in FIGs. 1 and 2. Part of the confusion between these terms may lie in Chang et al.'s use of the term "video object" which most appropriately correlates to the term Video Object Plane used in the present patent application. The present application, page 8, lines 1-2, notes that the present invention relates to prioritizing various types of coded data, such as visual objects, VOLs, VOPs or keyregions. As previously noted, Chang et al. limit their disclosure to prioritizing video objects as defined in their patent.

On page 3, paragraph b, of the Office Action, the Examiner explains that "[t]he objects data associated with a group form a video object layer. In Group i, the priorities for video object layers A, B, C, and D are assigned as 1, 3, 2, and 3 respectively. In each video object layer, the priorities are then assigned according to I, P, and B frames." The Examiner simply redefines video object layers to mean the video objects A, B, C and D shown in Chang et al. Again, these are different concepts and Applicant reaffirms that its video object layer differs from the video object in Chang et al.

Applicant provides Appendix B to illustrate that MPEG-4 considers video objects and video object layers to be two separate entities. The syntax for visual bitstreams in MPEG-4 uses two types of information: configuration and elementary stream data. Of

the configuration information, MPEG-4 uses global configuration information - referring to a group of visual objects simultaneously decoded and composed at the decoder, object configuration - referring to a single visual object, and object layer information - referring to a single layer of a single visual object. The structure of the coded visual data in MPEG-4 is such that it consists of an ordered set of video bitstreams, called layers. If there are two layers or more, the coded video data is called a scalable hierarchy. The present invention relates to layer priority while Chang et al.'s teachings relate to video object priority.

Appendix B contains pages xii, xiv, xv, 2, 4, 5, 7, 13-18, and 24-33 of the International Organization for Standardization (ISO) and the International ElectroTechnical Commission (IEC) International Standard for the Coding of audio-visual objects (ISO/IEC 14496-2:1999(E))[1], first edition dated December 1, 1999 (referred to herein as "MPEG-4"). Applicant contributed to the development of MPEG-4 and a review of the use of the terms video objects and video object layers within MPEG-4 will further help clarify the differences between the two concepts.

MPEG-4 defines a "video object" as follows:

> A video object in a scene is an entity that a user is allowed access, seek, browse, and manipulate. The instances of a video object at a given time are called video object planes (VOPs). The encoding process generates a coded representation of a VOP as well as composition information necessary for display. Page xiii.

Further, on Page xiv of MPEG-4, under the heading "Object Based Temporal Scalability", the standard states:

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[1] There are later versions of MPEG-4 but the general concepts discussed herein have not changed.

> Temporal scalability involves partition of VOPs into layers, where the lower layer is coded by itself to provide the basic temporal rate and the enhancement layer is coded with temporal prediction with respect to the lower layer. These layers when decoded and temporally multiplexed yield full temporal resolution.

Further comments may be found on page xv under the "Spatial Scalability" heading. Next, page 2 of MPEG-4 defines a "base layer" as an "independently decodable layer of a scalable hierarchy." Page 4 explains that an "enhancement layer" is:

> A relative reference to a layer (above the base layer) in a scalable hierarchy. For all forms of scalability, its decoding process can be described by reference to the lower layer decoding process and the appropriate additional decoding process for the enhancement layer itself.

Page 5 of MPEG-4 defines "layer" as "a scalable hierarchy [that] denotes one out of the ordered set of bitstreams and (the result of) its associated decoding process." Note also the definition of "spatial scalability" on page 7 and the last two paragraphs on page 13 of MPEG-4. Page 14, section 6.1.3 of MPEG-4 notes that "A video object commences with a video_object_start_code, and is followed by one or more video object layers." Pages 15-27 of MPEG-4 further discuss *inter alia* the differences between video objects and video object layers. Pages 27-33 illustrate the syntax for containing elementary stream data associated with a single layer. The syntax includes differing functions for the video objects ("VisualObject()", Page 27-28) and video object layers ("VideoObjectLayer()", pages 29-33). Applicant respectfully submits that inclusion of the portions of MPEG-4 contained in Appendix B not only clarifies the definitions of video object and video object layer, but makes it clear that these are two separate entities.

The concept of separately prioritizing video objects from prioritizing video object layers is also made clear in MPEG-4. Page 29 provides a separate parameter "video_object_layer_priority" having a code for specifying the priority of the video object layer that differs from the "visual_object_priority" parameter found on Page 28.

Applicant now turns to the claims.

Consider new claim 39. This claim recites assigning priorities to video object layers defined in the encoded video data stream, adding priority data for each video object layer to the encoded bitstream, and transmitting the video object layers and priority data to a decoder in an order based on the assigned priority of each video object layer. As discussed above, Applicant notes that the video object layer recited in claim 39 corresponds not to the video objects A, B and C discussed in Chang et al. Rather, the video object layers more appropriately correspond to the combination of objects, such as the "video frame" in FIGs. 1 and 2 of Chang et al. (Remember the "base layer" and "enhancement layer" discussed in the MPEG-4.) Therefore, the question is whether Chang et al. teaches prioritizing their video frame (which comprises objects A, B and C)? Applicant submits that Chang et al. fail to teach prioritizing their video frame (they prioritize their video objects) and therefore claim 39 is patentable.

Specifically, the Examiner asserts that Chang et al. in Fig. 2, element 21, and Col. 3, lines 10-26, Col. 4, lines 15-41 and FIG. 4 teach assigning a priority to the video object layer. However, keeping in mind the appropriate definition of Applicant's "video object layer" and how that differs from Chang et al.'s "video objects", it is clear that Chang et al. only refer to prioritizing video objects and not the video object layer. In this regard, Applicant notes that it may be its own lexicographer. The Examiner must

respect the terms used as defined by Applicant rather than how Chang et al. uses similar terms. MPEP 608.01(o). The MPEG-4 standard discussed above further clarifies the definition of a video object layer. Chang et al. simply never disclose or suggest determining a priority for a video object layer or their similar entire video frame shown in FIGs. 1 and 2. Therefore, claim 39 is patentable over Chang et al.

Further, since Chang et al. fail to teach prioritizing video object layers, they also fail to teach the step of adding priority data for each video object layer to the encoded bitstream. The Examiner asserts that Chang et al. teach at Col. 1, lines 25-34 and Col. 3, lines 57-67 encoding video object layer data in the bitstream. However, with the correct understanding of the use of the terms video object layer and video object in the present application and Chang et al., Applicant submits that it is clear that Chang et al. do not teach assigning priority data related to the priority of each video object layer. Accordingly, for these reasons, Applicant submits that claim 39 is patentable over Chang et al. Claims 40-44 depending from claim 39 are patentable as well.

Claim 29 recites assigning VOPs to one of a plurality of video object layers and then assigning a priority to each VOL. Accordingly, given the proper understanding of the differences between a video object as defined by Chang et al. and a video object layer as defined by the present application, Applicant submits that claim 29 and its dependent claims are also patentable.

Rejection of Claims 31-33 and 36-38 under Section 112

Applicant cancels without prejudice claims 31-33 and 36-38 thus rendering this rejection moot.

Rejection of Claims 34

The Examiner rejects claim 34 as being unpatentable over U.S. Patent No. 5,896,276 to Das et al. ("Das et al.") in view of Chang et al. Claim 34 recites assigning a priority to each VOL and as discussed above, Chang et al. simply fail to teach this limitation. The Examiner relies on Chang et al. as discussed above for the teaching of assigning a priority to the video object layer. Again, with the appropriate understanding of the scope of Chang et al.'s teachings, Applicant submits that Chang et al. are limited to teaching assigning a priority to video objects, not video object layers. Accordingly, claim 34 is patentable and in condition for allowance. Claim 35 depends from claim 34 and recites further limitations therefrom. Accordingly, claim 35 is patentable as well.

CONCLUSION

All rejections having been addressed, Applicant respectfully submits that all pending claims are allowable. A Notice to that effect is earnestly solicited.

Respectfully submitted,

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